Weyerhaeuser

Environment Health & Safety, WTC 2G2
PO Box 9777
Federal Way, WA 98063-9777
Telephone (253) 924-3746
Fax (253) 924-6182
E-Mail: Jennifer.hale@weyerhaeuser.com

August 30, 2007

Mr. Michael Berkhoff
Remedial Project Manager
U.S. Environmental Protection Agency – Region 5
77 West Jackson Boulevard, SR-6J
Chicago, IL 60604

RE: Preliminary Estimate of the Potentially Available Airspace at the 12th Street Landfill
Otsego Township, Michigan

Dear Michael:

As you requested, Weyerhaeuser Company (Weyerhaeuser) has requested RMT, Inc. (RMT), to demonstrate that there is sufficient airspace in the 12th Street Landfill for placement of the paper residuals/soil that are required to be disposed in this landfill by the Consent Decree for the 12th Street Landfill, as well as potentially additional paper residuals/soil that may be generated as a result of environmental response activities at the Plainwell Mill. The actual airspace that may be available at the landfill depends on a variety of factors. We used existing information as much as possible in developing our estimates. As needed, we made what we believe are reasonably conservative assumptions to complete the estimates. It may be worthwhile in the future to collect additional information to refine key assumptions. In addition this evaluation of current available capacity, we describe some options that may be used to potentially increase the available airspace.

Estimate of Potentially Available Airspace

We estimate that up to approximately **56,200 cubic yards (CY)** of air space may be available at the 12th Street Landfill, based on a comparison of the existing topography of the site and a preliminary grading plan that we developed using the following reasonably conservative assumptions:

- As planned as part of the Emergency Action for the former powerhouse channel and 12th Street Landfill (Emergency Action), the eastern slope of the landfill along the Kalamazoo River will be pulled back approximately 25 feet from the river to allow for the future placement of the final cover and to create room for an access road and monitoring wells. Pulling back this slope of the landfill is required in the ROD for this site. The eastern slope will be constructed at 5 horizontal to 1 vertical (5H/1V).
- The minimum factor of safety for all final landfill slopes will be 1.5 (this is a commonly used factor of safety in geotechnical design of stable constructed slopes).
- The remaining landfill slopes along the MDNR property, woodlands, wetlands to the north, and quarry property will be 4H/1V, with the southern slope varying to allow for access to the site (*e.g.*, an approximately 10-foot wide access road will likely need to be graded to a maximum of 10H/1V, the remainder of the slope is assumed to be 4H/1V).
- The paper residuals/soil currently present on the MDNR and quarry properties will be removed, regardless of the potential presence of PCBs, and placed in the 12th Street Landfill. This will require pulling back approximately 22 feet of material in these areas in order to allow for the placement of the final cover and to create sufficient room for an access road.
- The top of the landfill will be graded such that there will be an approximately 80-foot wide equipment access area with a 5 percent slope.

- The existing cover material (reportedly 2 to 7 feet thick) will be removed prior to the placement of additional residuals/soils (this existing cover materials will be used as general fill for achieving the final grades).
- The accuracy of the aerial topography for the site, which is plus or minus 1 foot on average, is representative of the existing conditions.
- The strength parameters of the residuals/soils are the same as the values we used for the eastern slope as documented in the Emergency Action Plan Design Report. Additional geotechnical information will be needed to confirm/refine the applicability of this assumption to other areas of the landfill.

Estimates of Material Required by the ROD to be Relocated or Disposed in the 12th Street Landfill

We estimate that approximately **43,300 CY** of residuals/soils from the 12th Street Landfill will need to be relocated back into the landfill to satisfy the requirements of the ROD for the 12th Street Landfill, based on the final residuals/soil grades calculated above and the following assumptions:

- Approximately **40,100 CY** of residuals/soils currently within the footprint of the landfill need to be cut and relocated elsewhere in the landfill to create 4H/1V and 5H/1V slopes and an access road around the perimeter of the landfill.
- Approximately **2,500 CY** of residuals/soil from the wetland area to the north of the landfill may need to be relocated into the landfill, based on a cleanup criterion of 4 mg/kg, which is the criteria that has been approved by the USEPA for the TCRA in the floodplain areas near residential properties, and which is proposed for the emergency action of the Plainwell Mill banks. This value is also the Michigan generic residential direct contact cleanup criterion. This may be a conservative assumption because there are no residential properties near the 12th Street Landfill. The estimated volume of residuals/soil is calculated from investigations conducted by others.
- Approximately **200 CY** of residuals/soils need to be excavated from the MDNR and quarry properties and relocated into the landfill.
- Approximately **500 CY** of residuals/soils will be excavated from the former powerhouse channel as a part of Weyerhaeuser's emergency action and relocated into the landfill.
- Residuals/soils from any source(s) will not need to be solidified, which if needed, would increase the disposal quantities of the materials listed above.
- Potential consolidation of the underlying residuals/soils as additional weight is placed on them has not been not been factored in to the above estimates. Consolidation would decrease the volume of in-place material as a result of the release of pore water and compaction of the *in-situ* materials. This would increase the available airspace.
- Potential compaction or fluff factors to account for differences in density, either more or less, that may occur as a result of excavating materials and/or placing and compacting them in the landfill have not been factored in to the above estimates.

Options for Potentially Increasing the Available Airspace

It may be possible to increase the available airspace of the 12th Street Landfill by up to 20,800 CY (from 56,200 to 77,000 CY) if additional field data are obtained that would allow certain assumptions to be refined, such as:

- Slope-specific residual/soil parameters that could be obtained from geotechnical borings may support steeper exterior slopes, from 4H/1V to 3.5H/1V, while maintaining a 1.5 safety factor. If the strength properties of the residuals/soils indicate that the soil has a higher friction angle and/or a higher cohesion than was assumed in the Emergency Action Design Report, the available airspace could be increased by approximately 5,800 CY.
- Revising the cut depth to native soils along the southern limits of the landfill by performing a Geoprobe investigation in this area, may show less residuals/soils need to be removed in these areas. This could increase the available airspace by up to 15,000 CY, depending on the actual depth of the base of the landfill in these areas.

Conclusions

Based on the above assumptions, sufficient capacity is available at the 12th Street Landfill to relocate the residuals/soils present in and adjacent to the landfill, with an excess capacity of approximately 12,900 CY to potentially up to 33,770 CY.

Please contact either me or Jim Hutchens at RMT if you have any questions.

Sincerely,

Weyerhaeuser Company

Jennifer Hale
Environmental Manager

cc: Paul Bucholz
Sam Chummar
Jim Saric
Eileen Furey
John Gross
Joe Jackowski
Martin Lebo
Mark Schneider
Kathy Huibregtse
Linda Hicken
Jim Hutchens